

REMARKS

The present invention is a portable device; a method of controlling a handportable device including a display and an illuminator for illuminating a display; a display module for an electronic device; a display module; and a display module for an electronic device. The present invention provides an improved backlighting in portable devices by providing illumination of a display of an electronic device which is dependent upon a detected sum of the light received from an illuminator and light incident on the display or ambient light. A portable device in accordance with an embodiment of the invention includes a display 14; a light detector 91 for detecting light incident on at least part of the display; a comparator 94 for detecting the light detected with a given threshold; and a controller 23 controlling an illuminator D1-Dn and 98. The display comprises a front face to be viewed by a user and a reverse face as illustrated in Fig. 7. The detector may be a phototransistor 91 positioned adjacent the reverse face as illustrated in Fig. 8. The controller 23 is arranged to control illumination of the display based on a threshold level of the sum of the light received from the illuminator D1-Dn and 98. As may be seen, from Fig. 8, as described on page 10 of the Substitute Specification, light from the LEDs 15 enters the diffuser 81 by means of apertures 88 with the phototransistor 91 therefore receiving a light level that represents the total light contributing to display illumination which is the sum of both the back light and the ambient light on the display with arrow 90 indicating the light path to the sensor 91.

Claims 1-5, 13-16 and 20 stand rejected under 35 USC §103 as being unpatentable over United States Patent No. 5,337,073 (Tsunoda et al.) in view of Japanese Publication 10096890 (Masahiro) A machine translation of Masahiro is

submitted herewith. These grounds of rejection are traversed for the following reasons.

It is noted on page 3 of the Office Action that the Examiner states that "Masahiro does not specifically shows where the total light corresponds to the sum of the light received from the illuminator and the light incident on the display". It is understood that the Examiner has a typographical error in this statement since the statement only could be made in the context of Tsunoda et al and therefore, it is interpreted in this manner. However, it is noted that the Examiner has previously stated on page 2 of the Office Action that Tsunoda et al disclose "...where the light detector is positioned to receive a light level that represents the total light contributing to display illumination which is the sum of the light received from the illuminator and light incident on the display" with the Examiner relying on column 5, lines 27-43 and column 7, lines 25-30.

In view of the apparent inconsistency between the two paragraphs as discussed above, the Applicant submits that Tsunoda et al do not disclose a light detector positioned to receive a light level that represents a total of the light contributing to illumination of the display which is the sum of light received from the illuminator and the light incident on the display as recited in independent claims 1, 14-16 and 20 prior to amendment. This operation of Tsunoda et al is readily apparent from column 5, lines 27-43, where it is stated on lines 34 et seq. that when the control sequence 80 determines that the ambient light illuminating is too low to see the display 24 it controls the switching circuit 86 to interconnect the EL lamp 26 and the light emitting circuit 84. In this regard, it is stated "[t]hereafter, the control

circuit 80 causes the light emitting circuit 84 to drive the EL lamp 26 thereby back-lighting the display 24".

It is therefore seen that sequentially in time that the illumination circuit 82 is operative or the light emitting circuit 84 is operative. Therefore, there is never a circumstance where the backlighting is controlled by the control circuit 80 based upon the sum of light received from the illuminator and light incident on the display as recited in the claims prior to amendment. The Examiner is further referred to the text at the bottom of page 10 through the first paragraph on page 11 of the previous amendment where it was argued that "while in Tsunoda et al the electroluminescent lamp 26 (1) senses the ambient light when the illumination sensed circuit 82 is operable when the switch 86 is connected in the position illustrated in Fig. 6 (2) and when the control circuit 80 senses that the light level is too low and the light emitting circuit is switched into operation, the electroluminescent lamp is driven to produce backlighting."

Masahiro has been cited as teaching "where the light detector is positioned to receive the light level that represents the total light contributing to display illumination which is the sum of the light received from the illuminator and the light incident on the display". As stated above, a machine translation of Masahiro is enclosed herewith. The Examiner's conclusion is correct as broadly stated with light from the CRT being directed sideways to the inclined detector 9a and further from the periphery outside the front of the display. However, this teaching does not render obvious the subject matter of the independent claims each of which recite a display comprising a front face to be viewed by the user and a reverse face and further that the light detected by the light detector which is adjacent to and faces the reverse

face from other than the front face which has no counterpart in Masahiro et al since the incident light on the display is from the front face.

Claim 1 recites "a portable device comprising a display comprising a front face to be viewed by a user and a reverse face...the light detector is positioned adjacent to and faces the reverse face to receive a light level that represents a total of light contributing to illumination of the display which is the sum of light displayed from the illuminator and light incident on the display and the controller is arranged to control illumination of the display based on a threshold level of the sum of the light received from the illuminator and light incident on the display"; claim 14 recites "a method of controlling a hand portable device including a display comprising a front face to be viewed by a user and a reverse face...detecting with a light detector adjacent to and facing the reverse face a light level that represents the total light contributing to display illumination which is the sum of the light received from the illuminator and the ambient light incident upon at least part of the display; ...controlling illumination of the display in dependence upon the output of the comparator based on a threshold level of a sum of the light received from the illuminator and the light incident on the display; claim 15 recites "a display module for an electronic device, the display module comprising a display panel having a front face to be viewed by a user and a reverse face; ...a light detector positioned adjacent to and facing the reverse face of the display panel to detect light which is the sum of the ambient light incident on at least part of the display and light from the illuminator...a controller controlling the illuminator in dependence upon the output of the comparator based upon a threshold level of the sum of the light received from the illuminator and the light incident on the display"; claim 16 recites "a display

comprising: a display element comprising a front face to be viewed by a user and a reverse face; a light detector positioned adjacent to and facing the reverse face for detecting light incident on at least part of the surface of a display element...the light detector is positioned to receive the light level that represents the total light contributing to illumination of the display which is the sum of the light received from the illuminator and the ambient light incident on the display based on a threshold level of a sum of the light received from the illuminator and the light incident on the display" ; and claim 20 recites "a display module for an electronic device, the display module comprising: a display panel having a front face to be viewed by a user and a reverse face; ...a light detector for detecting light incident on at least part of the display panel, the light detector being positioned adjacent to and facing the reverse face of the display panel to detect light incident on the device, which light is the sum of the ambient light and which is detected from other than the front face and the light from the illuminator ...control means for controlling the illuminator and in dependence on the output of the comparator based on a threshold level of the sum of the light received from the illuminator and the light incident on the display".

Accordingly, if the proposed combination of Tsunoda et al and Masahiro were made, the subject matter of the independent claims would not be achieved since Masahiro does not suggest the claimed light detector which is adjacent to and faces the reverse face. Moreover, it is submitted that the Examiner's citation of Masahiro would not motivate a person of ordinary skill in the art to modify the teachings of Tsunoda et al to arrive at the subject matter of the independent claims as amended except by impermissible hindsight.

Claim 2 further limits claim 1 in reciting the light detector is located behind the display, remote from the surface of the display onto which ambient light is incident. As has been pointed out above, Tsunoda et al do not teach that the light which is utilized to control the illuminator is the sum of light received from the illuminator and light incident on the display from a light detector adjacent to and facing a reverse face of the display. Moreover, while Masahiro does teach sensing ambient light from the front surface of the display, a person of ordinary skill in the art would not consider the teachings of Masahiro to be workable when mounted adjacent to and facing the rear face of the display since the methodology used to combine the light from the cathode ray tube and the ambient light from the front is to locate a light sensor peripherally outward from the display panel and not adjacent to and facing the reverse face of the panel. It is submitted that a person of ordinary skill in the art would not consider modifying Masahiro to position the light sensor adjacent to and facing the reverse face behind the panel except by impermissible hindsight.

Accordingly, it is submitted that claim 2 is patentable.

Claim 4 limits claim 1 in reciting the controller enables the illuminator in response to an indication by the comparator that the light level is less than a second threshold. Lines 36-41 of column 7 and lines 6-9 of column 48 discuss a single threshold. It is submitted that this disclosure does not correspond to the claimed second threshold. Accordingly, it is submitted that claim 4 is patentable.

Claim 5 further limits claim 3 in reciting the controller enables the illuminator in response to an indication by the comparator that the light detected is less than a second threshold. It is submitted that Tsunoda et al do not disclose the first and

second thresholds in column 7, lines 41-47, and column 8, lines 9-15, since only a single threshold is discussed.

Claim 13 is patentable for the same reasons set forth above with respect to claim 1.

Claims 6 and 7 stand rejected under 35 U.S.C. §103 as being unpatentable over Tsunoda et al in view of Masahiro further in view of United States Patent 6,078,302 (Suzuki). These grounds of rejection are traversed for the following reasons.

Claim 6 further limits claim 5 in reciting the controller partially enables the illuminator in response to an indication by the comparator that the light detected is between the first and second thresholds. Suzuki et al do not cure the deficiencies noted above with respect to Tsunoda et al and Masahiro. Suzuki et al teach a light sensor which relies solely on ambient light. See column 3, lines 19-44, wherein the detection of ambient light is utilized for use by an optimal brightness calculator 104. In Suzuki et al, a screen eliminating panel 102 is driven to hold optimal brightness. A photosensor 103 detects the ambient light which is utilized by the optimal brightness calculator 104 for driving the backlighting panel 102. Accordingly, a person of ordinary skill in the art would not be led to modify the teachings of Tsunoda et al with Suzuki et al to arrive at the claimed subject matter, since the claimed sum of the light received from the illuminator and the light incident on the display or ambient light would not be achieved since neither reference teaches the subject matter. Accordingly, the subject matter of claim 6 is not obvious.

Claim 7 further limits claim 6 in reciting "means for determining a change in output of a light detector over a predetermined period wherein the control means is

arranged to disable functionality related to the display in response to an indication that no change is determined. As stated above, Suzuki et al do not cure the deficiencies noted above with respect to the independent claims including claim 1.

Claims 8 and 9 stand rejected under 35 U.S.C. §103 as being unpatentable over Tsunoda et al in view of Masahiro and Suzuki et al further in view of U.S. Publication 2001/0,024,967 (Bauer). These grounds of rejection are traversed for the following reasons.

Bauer has been cited for teaching disabling the display in response to an indication that no change is determined with the Examiner relying upon paragraph [0014]. However, this teaching does not cure the deficiencies noted above with respect to Tsunoda et al, Masahiro and Suzuki et al.

Claims 10-12 and 22 stand rejected under 35 U.S.C. §103 as being unpatentable over Tsunoda et al in view of Masahiro in view of Bauer. This ground of rejection is traversed for the following reasons.

The Examiner relies upon paragraph [0006] of Bauer which is cited for teaching input means. However, the input means of Bauer do not cure the deficiencies noted above with respect to Tsunoda et al and Masahiro.

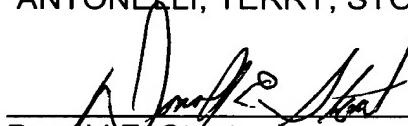
Claims 23 and 24 stand rejected under 35 U.S.C. §103 as being unpatentable over Tsunoda et al in view of Masahiro and Bauer and further in view of United States Patent 6,426,736 (Ishihara). Ishihara has been cited as teaching touch means comprising a display region. However, Ishihara do not cure the deficiencies noted above with respect to Tsunoda et al, Masahiro and Bauer.

In view of the foregoing amendments and remarks, it is submitted that each of the claims in the application is in condition for allowance. Accordingly, early allowance thereof is respectfully requested.

To the extent necessary, Applicants petition for an extension of time under 37 C.F.R. §1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (1344.40301X00) and please credit any excess fees to such Deposit Account.

Respectfully submitted,

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